The Assessment of Trauma History in Women With Co-occurring Substance Abuse and Mental Disorders and a History of Interpersonal Violence

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Abstract

The Women, Co-occurring Disorders, and Violence Study (WCDVS) was a large (N = 2729) multisite study of the effectiveness of integrated and trauma-informed services for women with substance use and mental health disorders and a history of interpersonal violence (physical or sexual abuse). Study participants' exposure to lifetime and current traumatic events was assessed at baseline and follow-up via in-person interviews. This article describes the choice of the Life Stressor Checklist-Revised (LSC-R) to assess trauma history to meet the WCDVS's research aims and to respond to consumer input. Quantitative data address the breadth and prevalence of potentially traumatic events in the past and current lives of study participants, the formation and properties of summary measures, and test-retest reliability. Qualitative data address tolerance of the instrument by interviewers and respondents and the generalizability of quantitative findings about trauma prevalence. Finally, recommendations are offered for improvements to the WCDVS version of the LSC-R for use in future research.

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The Women, Co-occurring Disorders, and Violence Study (WCDVS) was a large federally funded multisite study ($N = 2729$) of the effectiveness of comprehensive, integrated, trauma-informed, and consumer-involved services for women with substance use and mental health disorders and a history of interpersonal violence.* The aims of this article are to contribute to the understanding of measuring potentially traumatic events and to describe the kinds and frequencies of such events in the lives of women with co-occurring disorders and histories of physical or sexual abuse. An existing trauma assessment instrument, the Life-Stressors Checklist-Revised (LSC-R), was adapted for the WCDVS. Data are presented on the test-retest reliability of the WCDVS version of the LSC-R, on study participants' tolerance of the instrument, and on the breadth and scope of potentially traumatic experiences in the past and current lives of women in the study sample. The development, psychometric properties, and use of summary measures are described, and recommendations are presented for the improvement of the WCDVS version of the LSC-R for use in future research. A literature review focused on issues and challenges in the measurement of stressful and violent events sets the stage by describing the context of the WCDVS's selection of the LSC-R as the instrument with which to assess past and current exposure to potentially traumatic events.

Measuring Traumatic Events

Some of the questions faced by WCDVS investigators in their choice of a measure of traumatic events were: Should the focus be on stressful life events or be limited to the formal assessment of traumatic events? What events should be included? Are self-reports of such events reliable (temporally stable)? How deeply should interviewers probe for details of the events? What is sufficient for research purposes, as opposed to clinical purposes? What meaningful and analytically useful summary variables can be computed from the basic information? What instrument is most appropriate to the target population?

Differences between stressful life events and traumatic life events

The *Diagnostic and Statistical Manual's* (*DSM*) definition of trauma has changed over time, as understanding of the scope and impact of trauma has grown. The initial definition was of an event that would be markedly distressing to almost anyone and outside the range of usual human experience. More recently, traumatic events have been expanded to include experiencing, witnessing, or being confronted with events that involve actual or threatened death or serious injury, or a threat to the physical integrity of oneself or others. The latest definition also added the necessary condition of an emotional response of fear, helplessness, or horror at the time of the event. Whatever the definition, traumatic events are considered to be the cause of the development of subsequent post-traumatic reactions, and the current diagnostic procedure for post-traumatic stress disorder (PTSD) requires a formal assessment of trauma, based on the definition in *DSM-IV* (Criterion A: threat of death or serious injury and emotional response of fear, helplessness, or horror at the time of the precipitating event).

The framers of the original criteria for the PTSD diagnosis had in mind events such as war, torture, rape, and natural and man-made disasters. Traumatic events were considered different from

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the painful and stressful events that constitute the normal vicissitudes of life, such as divorce, loss, serious illness, and financial misfortune. Stress research has been primarily concerned with the scientific exploration of a causal relationship between life stress and illness. Early studies focused on the characteristics of events that were likely to be stressful and to lead to changes in psychiatric or physical health.[1] A parallel view of stressful life events emerged through the lens of bereavement, loss, and adaptation. Events such as divorce or death of a loved one were understood as rendering obsolete the individual's assumptive world and requiring a psychosocial transition that could generate internal turmoil, denial, and depression.[2,3] This distinction between stressful life events and traumatic events assumes that most individuals can cope with ordinary stress, whereas the adaptive capacities of most people are likely to be overwhelmed when confronted by a traumatic event.

Self-report

Self-report is often the only possible source of information on past or current experience of stressful events. The subjectivity of self-report of traumatic life events is often considered a hindrance to valid measurement. The recent discourse about "false memories" manifests the multifaceted problems involved in assessing the relative accuracy of self-reports, especially when they involve the report of past sexual or physical abuse.[4] Nonetheless, recent studies examining the use of self-report measures of trauma in psychiatric populations have concluded that they were reliable and valid.[5,6]

Which traumatic events to measure?

The WCDVS was designed with the understanding that trauma is often at the core of co-occurring problems of substance use and mental illness. Traumatic events may be brief, single incidents or prolonged and repeated. They may have occurred at any point in the lifespan, and, once begun, they increase vulnerability to additional trauma. In making a choice of trauma history assessment, WCDVS investigators wished to include life events that may not necessarily meet *DSM-IV* criteria for trauma but which were highly stressful nonetheless. The view adopted was that trauma is a complex, multifaceted experience that can result in adverse outcomes well beyond those of diagnosable PTSD. Thus, a measure was sought that was comprehensive and appropriate to the experiences of women.

Gender issues in the assessment of trauma history

Three general factors affect the sensitivity of trauma history measures with respect to gender: (1) the extent to which trauma exposure is queried in language that respondents understand easily and are willing to endorse, (2) the extent to which specific characteristics of traumatic events are measured, and (3) the inclusiveness of events or experiences examined. The importance of using language that respondents are willing to endorse became apparent when women with sexual experiences that met the legal definition of rape did not label their experiences as such and did not endorse items such as "Have you ever been raped?"[7,8] Characteristics such as age at the time of the event, severity, and chronicity are especially important with respect to gender, because they define the parameters of exposure that explain several gender differences in PTSD prevalence and comorbid symptoms. Gender-sensitive measures also include content relevant to the stressors and traumatic experiences that are specific to, or more common for, women or men.

Instrument choice

The Life Stressor Checklist-Revised (LSC-R) was chosen for the WCDVS because it is specifically tailored to the trauma exposure and stressful life experiences of women and has established validity.[9] The LSC-R is a 30-item instrument that includes stressors relevant to the lives of women who

do not usually meet *DSM* criteria for a traumatic event but may be relevant to understanding the context of trauma exposure, such as prolonged and unwanted separation from children or caregiving for someone ill or disabled. It also includes unique assessments for abortion and miscarriage, and differentiates forced sexual touching (sexual assault) from forced penetrative sex (rape). The LSC-R uses behaviorally specific language, and it includes probes to assess age at the time of the first event, chronicity, and *DSM-IV* criteria for life threat and emotional response. Information regarding the relationship to the perpetrator (someone known well versus not known well) is imbedded in the item wording when relevant. The LSC-R has demonstrated good criterion-related validity for PTSD in diverse populations of women and in several languages.[10–12]

Methods

Description of the WCDVS

The primary aim of the WCDVS was to evaluate the effectiveness of interventions that provide comprehensive, integrated, trauma-informed, and consumer-involved services to women who have co-occurring substance use and mental health disorders and a history of interpersonal violence.[13] The WCDVS used a quasi-experimental, longitudinal design with a common, standardized interview at baseline and 4 follow-ups: at 6 and 12 months to obtain descriptive and outcome data, and at 3 and 9 months to obtain interim services utilization data. The WCDVS was conducted at 9 sites across the country, where women in intervention services were compared with women in services as usual. Although the sites had common core service elements to provide integrated trauma, mental health, and substance abuse treatments, they differed by portal (substance abuse, mental health, or community-based) and modality (outpatient, inpatient, or mixed). Women aged 18 or older were eligible for the WCDVS if they had a substance use disorder *and* a mental health disorder, had accessed the formal treatment system on at least 2 occasions, and had a history of interpersonal abuse.

The eligibility criteria were very broad, even though they included both a substance use disorder and a mental health disorder. Only one of these disorders had to be current at the time of study entry; the other could be current or within the past 5 years. In terms of substance use disorders, a woman at study entry might have been just out of detoxification services or in recovery for nearly 5 years. In terms of mental health disorders, a woman at study entry might have been seeking services for untreated psychological symptoms or she might have been symptomatically stable. WCDVS women could have any major mental health disorder, including not only PTSD and depression but also anxiety, bipolar, multiple personality, obsessive-compulsive, personality, and schizophrenia spectrum disorders.

Modifications to the LSC-R

A workgroup of researchers, clinicians, and consumer-survivor-recovering women (CSRs) modified the LSC-R for the WCDVS to tailor it specifically to the study population. The original authors of the LSC and LSC-R had already addressed content validity,[9] but the workgroup felt that additional modifications were needed for the target population and the aims of the WCDVS. CSRs stressed the importance of gender specificity, cultural sensitivity, and caution regarding questions about abuse. They also expressed concern about potential distress to respondents as well as to interviewers and contributed to the common cross-site interviewer training and to the design of supports for interviewers. For example, CSRs endorsed separating death of a child from death of others close to the respondent and including a question about abuse by service providers. Their recommendations also led to the development of probes for frequency and age of onset of abuse that provided sufficient data for research purposes while maintaining a clinically sensitive approach and not prying too deeply into the details of specific stressful events.

The modified LSC-R, henceforth referred to as the WCDVS version of the LSC-R, contained 31 specific items and a final, open-ended item that asked about "any other stressful events." Eighteen items in the WCDVS version were identical to those in the original LSC-R, 6 items resulted from either merging or splitting LSC-R items, and 7 items were new (Table 1). Each item inquired about lifetime exposure to a stressful event (yes or no: "has this ever happened"), and, if positively endorsed, about current exposure (yes or no: "has this happened in the past 6 months"). There were no further probes for the first 17 items. The next 14 items, which focused on interpersonal abuse and neglect, included follow-up probes concerning frequency and age of onset. The frequency probe, "How often has this happened," had 3 response options: once, a few times, and a lot. The age of onset probe, "How old were you when this (first) happened," had 5 response options: 0–5 years, 6–10 years, 11–13 years, 14–17 years, and 18 years or older, which were also anchored by school-based developmental periods (preschool, elementary school, junior high or middle school, high school, beyond high school). As a result of these modifications and unlike the original LSC-R, the WCDVS version of the LSC-R does not assess trauma formally (ie, using *DSM-IV* Criterion A). Instead, it provides a comprehensive and sensitive assessment of stressful life events, many of which are presumed to lead not just to post-traumatic reactions but also to other Axis I or II mental health disorders such as depression, generalized anxiety, dissociative identity disorder, and substance use disorders.

The WCDVS version of the LSC-R was embedded in a comprehensive interview that included measures of personal and family characteristics, substance abuse and mental health treatment history, patterns of substance use, general mental health symptoms, PTSD symptoms, service utilization, and perceptions of care. Common training in standardized research interviewing and study-specific procedures was provided for interviewers from all study sites.

Retest sample

A subset of women completed the cross-site baseline interview on 2 separate occasions, close in time, to enable analysis of test-retest reliability (temporal stability). The retest sample numbered 186, which was approximately 20 women from each study site. For those women who completed the baseline interview in 1 session ($n = 174$), the retest interview occurred an average of 7 days later (SD = 4.2; Range = 2–35 days). For the remaining 12 women, who required 2 sessions for their baseline interview, the time between the second session and the retest interview was also 7 days (SD = 4.8; Range = 1–20 days).

Survey of sites concerning LSC-R tolerance

A concern shared by CSRs, clinicians, and researchers was the potential of the trauma history assessment to elicit distress and to trigger unwanted emotional reactions. To assess how well participants in the WCDVS tolerated the trauma history assessment, we analyzed the responses from the study sites to 4 questions addressing (1) research interviewers' opinions of women's reactions, both positive and negative; (2) whether interviewers noticed any patterning in women's reactions; (3) what it was like for interviewers to administer the WCDVS version of the LSC-R; and (4) whether there were any adverse events associated with it.

Summary variables

A WCDVS workgroup discussed ways in which information from the WCDVS version of the LSC-R could be used to create summary variables for use as measures of (1) individual differences in *lifetime* trauma history, for description and as covariates in statistical analyses, and (2) individual differences in *current* exposure to traumatic events, as covariates in statistical analyses and as secondary outcome measures.

Table 1

Item response frequency and test-retest reliability for the WCDVS version of the Life Stressor Checklist-Revised (LSC-R)*

Stressful life events	Ever experienced			Experienced within past 6 months		
	Frequency "yes" (%) ($N = 2729$)	κ ($n = 186$)	Absolute agreement, % ($n = 186$)	Frequency "yes" (%) ($N = 2729$)	κ ($n = 186$)	Absolute agreement, % ($n = 186$)
1. Been in a *serious* disaster?†	804 (29.5)	0.75	89.7	54 (2.0)	0.39	98.4
2. Had a serious accident or an accident-related injury?†	1449 (53.1)	0.60	79.6	116 (4.3)	0.32	97.9
3. Close family member ever sent to jail?†	1817 (67.0)	0.68	84.8	541 (20.0)	0.57	89.1
4. Been sent to jail or juvenile detention?†	1909 (70.0)	0.85	92.5	714 (26.2)	0.85	94.6
5. Ever put in foster care or put up for adoption?†	566 (20.8)	0.84	94.6	N/A	N/A	N/A
6. Did parents separate or divorce while you were living with them?†	1613 (59.4)	0.80	90.3	N/A	N/A	N/A
7. Been separated or divorced?†	1431 (52.6)	0.85	92.4	316 (11.6)	0.76	95.1
8. Been homeless?†	1959 (71.8)	0.82	92.5	996 (36.6)	0.47	89.8
9. Have serious money problems?†	2374 (87.1)	0.67	94.1	1772 (65.2)	0.63	86.3
10. Have a very serious physical or mental physical mental illness?†	1657 (60.7)	0.57	78.5	939 (34.5)	0.60	81.7
11. Had an abortion?†	1516 (55.6)	0.95	97.3	65 (2.4)	0.56	98.4
12. Had a miscarriage?†	1209 (44.4)	0.97	98.4	82 (3.0)	0.59	97.8
13. Been separated from child(ren) against your will?†	1646 (60.9)	0.74	86.9	820 (30.4)	0.76	91.2
14. Baby or child of yours have a severe physical or mental handicap?†	374 (13.9)	0.64	92.8	141 (5.2)	0.61	96.7
15. Death of child?†	228 (9.7)	0.84	97.5	13 (0.6)	N/A	100.0
16. Been responsible for taking care of someone close to you (*other than your child*) who had severe physical or mental handicap?†	1089 (39.9)	0.67	84.4	284 (10.4)	0.73	95.7
17. Anyone close to you (*other than your child*) ever died?†	2340 (85.8)	0.59	88.7	489 (18.0)	0.70	91.4
18. Before age 18, see physical violence between family members?†	2046 (75.1)	0.64	88.2	N/A	N/A	N/A
19. Been emotionally abused or neglected?†	2290 (84.0)	0.56	87.1	879 (32.4)	0.56	82.3

20. Been physically neglected?[i]	882 (32.4)	0.66	85.5	162 (6.0)	0.42	92.5
21. Been physically abused—for example, hit, choked, burned, or beaten—or severely punished—for example, locked up, shut in a closet, tied up, or chained—by someone you knew well such as a parent, sibling, boyfriend, or girlfriend?[i]	2316 (84.9)	0.52	86.0	486 (17.9)	0.61	89.7
22. Been robbed, mugged, or physically, *not sexually*, attacked by a stranger or someone you did not know well?[i]	1297 (47.6)	0.64	82.8	211 (7.7)	0.34	88.7
23. Seen a robbery, mugging, or attack taking place?[i]	1388 (51.1)	0.72	86.0	256 (9.4)	0.38	91.4
24. Been stalked or had anyone threaten to kill or seriously harm you?[i]	1946 (71.4)	0.57	81.7	457 (16.8)	0.64	92.4
25. Been strip searched, forcibly restrained, or held against will by a provider of MH or SA services?[i]	568 (20.8)	0.79	93.6	174 (6.4)	0.64	94.6
26. Discriminated against because of race, ethnic group, gender, sexual orientation, or religion?[i]	912 (33.5)	0.62	83.9	369 (13.6)	0.63	93.6
27. Been the victim of a hate crime? Have violence directed at you because of your race, ethnic group, gender, sexual orientation, or religion?[i]	409 (15.0)	0.71	93.0	97 (3.6)	0.48	96.8
28. Been bothered or harassed by sexual remarks, jokes, inappropriate touching or demands for sexual favors by someone at work or school?[i]	1143 (41.9)	0.65	82.8	248 (9.1)	0.66	94.6
29. Touched or made to touch someone else in a sexual way because you felt forced in some way or threatened by harm to yourself or someone else?[i]	1827 (67.1)	0.56	80.1	243 (9.0)	0.57	92.9
30. Have sex because you felt forced in some way or threatened by harm to yourself or someone else?[i]	1975 (72.6)	0.63	85.0	275 (10.2)	0.75	95.7
31. Have unwanted sex in exchange for money, drugs, or other material goods such as shelter or clothing?[i]	1545 (56.7)	0.87	93.5	480 (17.6)	0.71	90.2

*WCDVS indicates the Women, Co-occurring Disorders, and Violence Study; N/A, not applicable.

[i]Relationship to original LSC-R: Same as, or similar to, original.

[j]Relationship to original LSC-R: Split or merged from original.

[k]Relationship to original LSC-R: New for WCDVS version.

Five summary variables resulted: *Lifetime exposure to stressful events* (LESE) uses information from all 31 specific items to indicate the breadth of exposure to stressful events in each woman's lifetime. A score on the LESE is equal to the total number of items endorsed (Range = 0–31); *Lifetime frequency of interpersonal abuse* (LFIA) uses follow-up probe information from 9 items (Table 1: items 18, 19, 20, 21, 24, 25, 29, 30, 31) to quantify the frequency of interpersonal abuse in each woman's lifetime. Respondents can answer "never" (0), "once" (1), "a few times" (2), or "a lot" (3) to each probe about the frequency of the abuse. Three of the 9 items (21, 29, 30) ask about frequency of abuse in both childhood and adulthood, and thus 12 responses are summed (Range = 0–36); *Frequency of childhood abuse* (FCA) is formed by summing the responses to 3 frequency probes pertaining to childhood physical and sexual abuse (Table 1: items 21, 29, 30); *Current exposure to interpersonal abuse* (CEIA) consists of the summed responses ("no" = 0; "yes" = 1) to 8 items pertaining to recent exposure to interpersonal abuse (Table 1: items 19, 20, 21, 24, 25, 29, 30, 31); and *Current exposure to other stressors* (CEOS) sums the responses to the 20 recent-exposure items that are not included in the CEIA scale (Range = 0–20). In addition, the workgroup developed rules for combining item and probe responses to produce 4 dichotomous variables that indicated the presence or absence of childhood physical abuse, childhood sexual abuse, adulthood physical abuse, and adulthood sexual abuse.

These summary variables assume that a high frequency of trauma exposure and a wider exposure are indications of increased severity, but they intentionally refrain from assigning weights to different types of experiences. Although several factors other than frequency have been proposed to relate to the severity of trauma exposure, for example, age of onset and relationship to the perpetrator, the field is still far from generating an accepted severity algorithm. The purpose here is not to codify these summary variables, but rather to suggest possible ways to combine single-item data into meaningful composites and to examine their psychometric properties. Despite serious limitations of summary measures when comparing individual women, there is a clear need for aggregate trauma history variables for statistical analyses of group differences.

Qualitative analysis of the final open-ended item

The Trauma Measures Qualitative Workgroup analyzed the responses to the final item of the WCDVS version of the LSC-R ("Are there any other upsetting or stressful events we did not include that you would like to mention? What was the event?").* Members of the workgroup represented CSR, clinical, and research perspectives and included 2 WCDVS interviewers.

The workgroup combined 2 different methodologies. Initially, analysis of responses was guided solely by grounded theory, according to which themes arise from the data rather than being imposed on it by the analyst.[14] As workgroup members identified themes in the baseline responses, they

The authors acknowledge their debt to all the members of the Trauma Qualitative Workgroup, which was responsible for analyzing study participants' responses to the final, open-ended question of the WCDVS version of the LSC-R. In alphabetical order, members, followed by their WCDVS role, site or affiliation, and location, are: Paula Bjelajac (CSR and clinician, Prototypes, Culver City, Calif), Catherine Coughlan (interviewer, ALLIES, Stockton, Calif), Elizabeth Jackson (researcher, WCDVS Coordinating Center, University of North Carolina, Chapel Hill, NC), Nina Kammerer (researcher, WELL Project, Cambridge, Mass), Ruta Mazelis (CSR consultant, WCDVS Coordinating Center, Policy Research Associates Inc, Delmar, NY), Debra Kram-Fernandez (researcher, Portal Project, New York, NY), Lisa Miller (researcher, Boston Consortium for Families, Boston, Mass), Susan Mockus (CSR consultant, TAMAR Project, Baltimore, Md), Terri Nadlicki (researcher, WCDVS Coordinating Center, University of North Carolina, Chapel Hill, NC), Andrea Savage (researcher, Portal Project, New York, NY), Debra Wagler (interviewer, ALLIES, Stockton, Calif), and Wendy Vogel (researcher, WCDVS Coordinating Center, Policy Research Associates Inc, Delmar, NY). Nina Kammerer drafted the workgroup's contributions to this article and revised them on the basis of feedback from workgroup members. She thanks MeeLee Kim, Carol Prost, and Dominique Simon for illuminating conversations and editorial suggestions. Limitation on the number of authors prevented officially including all members of the workgroup as authors.

recognized that some responses described events that were covered in one of the preceding specific items. In addition, they recognized that many of the themes identified were closely related to the events covered in those items. Therefore, a second analytic strategy was employed, which derived themes or codes from categories in the specific items. Combining this top-down approach with the bottom-up approach of grounded theory resulted in a tripartite coding structure: Coding I, themes that are the same as those in the 31 specific items; Coding II, themes that are similar to those in the specific items; and Coding III, themes that are new and different from those in the specific items.

Results

Characteristics of the WCDVS study participants

The WCDVS baseline sample ($N = 2729$) represents the largest study sample of dually diagnosed treatment-seeking women who have completed a common trauma history assessment. A description of the characteristics of these women sheds light on the generalizability of the WCDVS findings on the past prevalence and 6-month incidence of stressful events in women's lives, as well as on tolerance of the WCDVS version of the LSC-R.

The WCDVS participants were, on average, 36 years old, ranging from 18 to 76. Fifty percent had completed high school, and another 24% had a Graduation Equivalency Diploma (GED). Women self-identified as white/Caucasian (54%), black/African American (29%), and Hispanic/Latina (18%). More than one third (38%) were married or partnered, while almost one third (30%) had never married. These women had, on average, $682 during the past 30 days, with a range from $0 to $30,000; 12.6% were employed currently; and 71.8% had been homeless sometime in their life. Most of the women had had children (86.7%), but only 31.7% were living with a child younger than 18 years (See McHugo et al[13] and Becker et al[15] for fuller descriptions). In addition, study participants lived in urban, rural, and suburban settings in 6 states and the District of Columbia.

Reactions to the WCDVS version of the LSC-R

When asked about respondents' reactions to the trauma history assessment, interviewers reported that most women either had little reaction or found it a positive experience. Women stated that the questions gave them perspective on how much they had endured and survived, or how fortunate they were to have avoided some of the events asked about. A number of women said that they appreciated being asked directly about stressful experiences in their lives and that they had told interviewers things that they had never disclosed to anyone else. For the few women who appeared distressed during the administration of the WCDVS version of the LSC-R, it was expressed as nervousness or tenseness, particularly at the baseline interview, or as tearfulness or weeping. Interviewers noted that women's reactions appeared to be related to their stages of recovery (eg, length of sobriety) and therapeutic experiences (eg, how often they had described their trauma experiences in clinical settings). Those few women who struggled with the trauma assessment tended to be more fragile before the interview than women who did not, and women who had experienced interpersonal violence during the preceding 6 months showed greater emotion. No interviewer reported that any woman refused the trauma history assessment. Only 1 site reported adverse events related to the WCDVS version of the LSC-R to their institutional review board (IRB); 3 such events were reported; none had long-term negative consequences. Another site referred 2 women for clinical services as a result of minor distress expressed during the trauma assessment. Thus, out of roughly 6000 baseline and follow-up interviews, there were only a handful of cases where special considerations were necessary.

Interviewers reported that they appreciated that women were not asked to tell their stories or probed for details, and that the items progressed from less intrusive to more intrusive events. Some interviewers said that it was difficult to hear about the traumatic experiences of the women they

interviewed, but as they became more experienced, they felt that the interviews became easier to administer. Although avoiding the details of traumatic events is protective of respondents and interviewers, a few interviewers felt uncomfortable asking women about such events without giving them an opportunity to tell their stories.

Lifetime and current experiences of stressful events

Table 1 presents the frequency statistics for the 31 specific items of the WCDVS version of the LSC-R. The lifetime frequencies from the baseline interview ($N = 2729$) range from 9.7% for the death of a child to 87.1% for money problems. Other low-frequency ($\leq$20%) lifetime events were having a handicapped child and being the victim of a hate crime. Other high-frequency ($\geq$80%) lifetime events were loss of a loved one, emotional abuse, and physical abuse. Some of these exposures occurred in the past 6 months. The current frequencies range from 0.6% for death of a child to 65.2% for money problems. Other low-frequency ($\leq$5%) current events were experiencing a disaster, being in a serious accident, having an abortion or a miscarriage, and being the victim of a hate crime. Other high-frequency ($\geq$30%) current events were homelessness, having a serious physical or mental illness, becoming separated against her will from a child, and emotional abuse.

Test-retest reliability of the WCDVS version of the LSC-R

Table 1 also presents the test-retest reliability statistics for the specific items, based on the retest sample ($n = 186$). The percent absolute agreement is presented to indicate obtained levels of agreement, and κ, which reflects the chance-corrected level of agreement, is presented as the index of reliability. All of the lifetime items exceed published criteria for acceptable reliability based on κ ($\geq$0.40), and many show high levels of agreement between test and retest.[16] In general, test-retest reliability based on κ was lower for the current items, although the percent absolute agreement was seldom lower than 90%, a discrepancy that is likely due to low base rates.[17] Kappa for 4 items was below 0.40, but most were moderate to high, indicating good test-retest reliability for reports of recent stressful events.

Open-ended questions are not designed for test-retest reliability, and no standard method of calculating their reliability exists. Yet there was interest in examining the correspondence between test and retest responses to the final item. In the test-retest sample of 186 women, 134 (72%) did not answer this item at either administration. Of the 52 women who answered it at one or both administrations, the pattern of responses was 20 at both, 16 at test only, and 16 at retest only. Of the 20 who answered at both administrations, 9 gave responses with identical content both times, 7 gave responses that overlapped partially, and 4 gave responses that were completely different.

Summary variables

The distributions of the lifetime summary variables (LESE, LFIA, FCA) had good properties, with means centered within the range and good variability (Table 2). The intraclass correlation coefficient was computed as an index of test-retest reliability for continuous measures.[18] The lifetime summary variables showed high test-retest reliability. On average, women in the WCDVS reported exposure to about half of the 31 stressful events in their lifetimes (LESE mean = 16.32, with a range from 2 to 30). The scales for current exposure (CEIA and CEOS) had lower test-retest reliability, although it was still acceptable. On average, the women reported about 1 exposure to interpersonal abuse and about 3 exposures to other stressors during the past 6 months. Table 3 presents the frequencies and the test-retest statistics for the 4 indicator variables. The frequencies indicate very high rates in all 4 abuse categories among the women in the WCDVS study group, and test-retest reliability (κ) is moderate to high for these 4 indicator variables.

Table 2

Descriptive and test-retest (intraclass correlation coefficient) statistics for the summary variables from the WCDVS version of the Life Stressor Checklist-Revised*

Summary variable	Mean	SD	Range	Intraclass correlation coefficient
Lifetime exposure to stressful events (LESE)	16.32	4.57	2–30	0.86
Lifetime frequency of interpersonal abuse (LFIA)	15.86	7.39	0–36	0.88
Frequency of childhood abuse (FCA)	3.72	2.99	0–9	0.86
Current exposure to interpersonal abuse (CEIA)	1.16	1.54	0–8	0.77
Current exposure to other stressors (CEOS)	3.14	1.99	0–16	0.77

*WCDVS indicates the Women, Co-occurring Disorders, and Violence Study.

Final item: Coding I and II

The item-by-item specifications for the WCDVS comprehensive interview instructed interviewers to record the response to the open-ended item verbatim and to record the event even if it fits into an earlier question. At baseline, 583 (21.36%) of 2729 women described "other" events.

There are several reasons why women may have reported events appropriate to the specific items in response to the final, open-ended item. One reason is not understanding the close-ended item that covered their response. Some instances of differential understanding may be due to the structure of 14 items, which contain a parenthetical clarification that was read only if a woman asked about the question's meaning. For instance, the parenthetical to the item about ever having a serious physical or mental illness includes "tried to kill yourself" as an example, but some women's responses to final item mention their suicidality or suicide attempts. The final item also offered some women an opportunity to tell their "story" by naming or recounting traumatic events that they had experienced. Other women may have described an event because they felt that its emotional weight, or some nuance of its meaning or nature, was not fully captured by any of the preceding questions. Some of the responses to the final item suggest that women were conveying the complexity or multifaceted nature of the event or series of events, which are qualities not captured in the close-ended questions.

Many responses to the final item concerned experiences closely related to those covered by the specific items, but they included additional dimensions. Examples include sexual harassment outside the context of work or school, and harassment that was not experienced as sexual in content. Two questions for which additional dimensions were frequent were death of a child ($n = 8$; 1.4% of the 583 responses) and death of someone close to the respondent other than her child ($n = 73$; 12.5%

Table 3

Descriptive and test-retest statistics for the indicator variables based on the WCDVS version of the Life Stressor Checklist-Revised*

Indicator variable	Frequency "yes" (% yes)	κ	% absolute agreement
Childhood sexual abuse	1688 (62.0)	0.76	88.7
Childhood physical abuse	1696 (62.2)	0.67	84.4
Adulthood sexual abuse	1637 (60.3)	0.69	85.5
Adulthood physical abuse	2195 (85.4)	0.51	86.3

*WCDVS indicates the Women, Co-occurring Disorders, and Violence Study.

of the 583 responses). These additional dimensions included death by suicide, murder, accident, or disaster; death that the respondent was present at or witnessed; multiple losses; and death followed by the respondent finding or seeing the body.

Many responses to the final item were similar to the two specific items concerning sexual abuse (Table 1: items 29 and 30). Because some women may not attach the word "rape" or "incest" to their experiences, neither word was included in these specific items, but without the inclusion of these words, some women found that these items did not capture their experiences. In the words of one woman when asked about other stressful events, "I consider my rape and kidnapping something you didn't specifically get to." A number of women mentioned incest or molestation by a relative in response to the final item. The wording of the specific question about forced penetrative sex (Table 1: item 30: "Did you ever have sex...?") may have implied active participation on the respondent's part that she did not feel occurred. An interviewer noted that a respondent identified a rape in the final item but did not include it in response to the specific item, because "that question was about having sex when you did not want to, not rape." These events may also have been reported in the final item because respondents did not consider them to have involved either the force or threat that is explicit in the specific item, or they did not consider forced penetration to be "sex."

Final item: Coding III

Using grounded theory, the Trauma Measures Qualitative Workgroup identified a number of themes that are either not among or not closely related to the events covered in the specific items. These themes include (1) a number of events or experiences of the respondent (eg, risky sexual behavior, self-harm), (2) experiences of the respondent's children (eg, respondent abused her children, someone else abused her children, respondent abandoned her children), (3) other violence perpetrated by the respondent (eg, respondent killed someone), (4) issues related to the respondent's natal family (eg, mental illness of a parent), (5) the respondent being falsely accused or not believed, and (6) the respondent keeping secrets or fearing negative consequences of telling the truth. A stressful personal experience that 18 of 583 (3%) reported in answer to the final question was being kidnapped or abducted.

Discussion

The findings indicate that the WCDVS version of the LSC-R was well received by respondents and interviewers, asks about stressful life events that are common to women in the target population, and has good test-retest reliability (temporal stability). The relevance of the items to the experiences of the women can be inferred from the high rates of endorsement of single items and membership in all 4 abuse categories. The test-retest reliabilities for single items were similar to those found in other studies with similar populations.[5,6] The summary variables were also temporally stable (high test-retest reliability) and had good measurement properties. By combining quantitative and qualitative information, the WCDVS findings document not only the prevalence of these stressful events but also the complexity of the lives of women with co-occurring disorders. Most responses to the final item concerned events covered in specific items or captured additional dimensions of an event covered in a specific item. If anything, therefore, the responses to the final, open-ended question suggest that some specific items are undercounted rather than overcounted.

All women in the WCDVS reported, when being screened for eligibility, that they had accessed services for substance use or mental health problems on at least 2 previous occasions. The duration of each previous contact could have been as short as a single office visit. All women in the study also endorsed an item on the common eligibility screening instrument that asked if she had ever been physically or sexually abused. This does not mean that the women in the study had previously been assessed for trauma or had previously received counseling in any format for their trauma. Information from site interviewers and clinicians and from responses to the open-ended question

in the WCDVS version of the LSC-R indicated that some of the women had never revealed their traumatic experiences prior to their participation in the WCDVS. Even more had never received treatment that addressed their trauma prior to the WCDVS.

Thus, women in the WCDVS represent a large, demographically and geographically diverse sample with varying degrees of current substance use and mental health symptoms and varying frequencies of past and current stressful life experiences. In addition, they had received and were receiving varying amounts of services, including treatment for trauma, in a variety of settings. This suggests that findings concerning the lifetime prevalence and the past 6 months' incidence of stressful events are broadly generalizable to treatment-seeking women aged 18 and older who have co-occurring substance use and mental health disorders and a history of interpersonal violence. Despite convenience, clustered sampling in WCDVS, the broad eligibility criteria, the large sample size, and the site diversity support the wide applicability of the WCDVS version of the LSC-R for the assessment of trauma among women accessing public-sector services for substance abuse and mental health treatment and rehabilitation.

Overall, WCDVS data on the LSC-R support the conclusion of Newman and colleagues that women "expressed few adverse reactions to the inquiry, and in many cases, derived benefit from participation in the study."[19] The WCDVS version of the LSC-R was well tolerated by participants and liked by interviewers. There were many reports of positive reactions to it, and there were very few adverse reactions. Diversity among the WCDVS study participants in terms of severity of previous and current trauma, whether or not they had ever been assessed for trauma or previously revealed their stressful life experiences ("told their story"), and intensity of both prior and current treatment suggests that the WCDVS version of the LSC-R would be well tolerated by most women with trauma histories. Because researchers and IRBs are obligated to follow the principals of nonmalfeasance and beneficence, it is important to examine tolerance of trauma history assessments such as the WCDVS version of the LSC-R. The data gathered through the survey of interviewers indicate the value of multiple strategies for collecting information on study participants' tolerance of trauma history assessment. The WCDVS participant interviews would have benefited from the inclusion of self-report items on reactions to the trauma assessment.

Six recommendations for the improvement of the WCDVS version of the LSC-R emerged from the Trauma Measures Qualitative Workgroup's analysis of baseline responses to the final item. *First*, parenthetical examples and clarifications contained in specific items should be either dropped or included directly in the questions. To prevent respondents from taking examples as exhaustive rather than illustrative, they should be preceded by phrasing such as, "Some examples of the kinds of events this question covers are . . ." *Second*, based on the frequency of open-ended responses that noted added dimensions of the death of a child or of someone else close to the respondent, these dimensions should be added as specific probes following an affirmative answer to either question. The *third* recommendation concerns one of the specific questions about physical abuse (Table 1: item 21). Some instances of physical abuse in which the perpetrator was not well known to the respondent were missed because physical abuse by a stranger was included with being robbed or mugged. Separating physical abuse by a stranger from a robbery or mugging would elicit a broader range of reported events.

The *fourth* recommendation is that the scope of several specific questions should be expanded. The specific item about the separation or divorce of parents pertains only to legally married parents. Similarly, another specific item asks whether the respondent has "ever been separated or divorced?" Some women who answered either of these items in the affirmative may have been counting partnerships that were not legal, whereas other women may have saved such instances for the final item. The specific item about serious money problems includes the example of not having enough money to pay the rent, but it does not include not having enough money to pay the mortgage. The specific item about being "strip searched, forcibly restrained, or held against your will by a provider of mental health or substance abuse services" could include representatives of any sort of service or

official agency, including corrections officers and members of the clergy. Women's responses to the final item also indicated other reasons for discrimination and other contexts for sexual harassment.

The *fifth* recommendation is to add a specific question about kidnapping and abduction, whether by a stranger or someone known well. *Finally*, the high frequency of responses to the final item that were coded as sexual abuse indicates that these 2 specific items require revision (Table 1: items 28 and 29). Although not using the terms "molestation," "childhood sexual abuse," "rape," and "incest" in specific items may prevent undercounting among women who do not apply them to their own experiences, it may lead to undercounting among women who do. As one woman said in response to the final, open-ended item at the 12-month follow-up, "I think rape should be a specific question . . ."

On the basis of these recommendations and other experiences during the WCDVS, a workgroup is revising the WCDVS version of the LSC-R further to increase the clarity and scope of the items, and, consequently, to increase reliability and validity (content validity and construct validity). Copies of the revised WCDVS version of the LSC-R will be available from the original author.*

Implications for Behavioral Health

The WCDVS version of the LSC-R provides researchers and service providers with a trauma history assessment that is especially appropriate for women who have substance use and mental health problems and who have a history of interpersonal violence and abuse. This version of the LSC-R is appropriate for research where a trauma assessment is needed that is comprehensive and has good psychometric properties but is not distressing to respondents. The summary variables used in the WCDVS, or variations on them, may be especially useful for research where the specific details of trauma history are less important than global measures of exposure and severity. The WCDVS version of the LSC-R is also appropriate as an initial assessment of trauma history in clinical settings, where in-depth follow-up assessments would be used to determine post-traumatic diagnoses or to prepare for trauma-specific treatments. In addition, the findings from this study can be used to reassure IRBs and other stakeholders concerning the minimal risks associated with the assessment of trauma history. More broadly, the WCDVS highlighted the value of involving consumers in developing and tailoring assessments to special populations. It also showed that trauma history assessment can be tolerated well, and even regarded positively, despite the vulnerabilities of the target population. As service systems and single agencies move toward trauma-informed and trauma-specific services, the need to assess both past and recent trauma history will increase accordingly. The WCDVS version of the LSC-R offers a safe and reliable assessment of trauma exposure and life stressors, which will enable improved treatment and rehabilitation strategies and lead to better outcomes for women with co-occurring disorders.

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*Copies of the Life Stressor Checklist-Revised (LSC-R) and the WCDVS version of the LSC-R are available from Rachel Kimerling, PhD, National Center for PTSD, Palo Alto VA Health Care System (352-117MPD), Menlo Park, CA 94025. E-mail: Rachel.Kimerling@med.va.gov. Members of the Trauma Qualitative Workgroup are currently collaborating with Dr Kimerling on a revised WCDVS version on the basis of the findings of this study. When completed, this revised WCDVS version of the LSC-R will also be available from Dr Kimerling.

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